9.57, Fall 2001, PROBLEM SET #1

Please note: These are not meant to be “tricky” but to help you learn, to let you test your understanding. Answers should be given in a fairly brief manner; no extra points for extra words. Clarity and correctness is most important. Good luck.

**PROBLEM (1)**

Consider the set of “languages”, all of which have sentences that are made up from the word “zot.”

L1 is {zot, zot zot, zot zot zot, …}

L2 is {zot zot, zot zot zot, zot(4), …}

Li is {zot(i), zot (i+1), zot (i+2), …)

…

The notation zot(3) means 3 occurrences of zot, i.e. zot (4) means zot zot zot zot. And so on for the notation. This is an infinite class of languages. L2 simply omits the sentence “zot” and has all the other sentences made from zot. L3 omits “zot” and also omits “zot zot”, but has all the other sentences. In general Li has all sentences on the word “zot”, starting from zot (i) and increasing in length. The languages in the class are defined for all I, that is, there is an infinite class of languages.

Question: Is this class of languages learnable, by the definition given in class, that is, is there a learning procedure which, hearing sentences one after the other from the language (no negative information), will eventually guess the language and never change after that? That is, this learning procedure has to work for all languages in this class. If there is such a learning procedure, describe it. On the other hand, if the class of languages is *not* learnable, say why that is.

**PROBLEM (2)**

Consider the following interchange.

Child: Nobody don't like me
Mother: No, say "nobody likes me."
Child: Nobody don't like me.
(eight repetitions of this dialogue).
Mother: No, now listen carefully; say "Nobody likes me."
Child: "Oh, nobody don't likes me."

Does this interchange argue for or against the usefulness of negative evidence in language learning? Be brief. Two or three sentences are enough to explain.